

# HEIGHT ADJUSTMENT DEVICE FOR WASHSTAND

## BACKGROUND OF THE INVENTION

### 1. Field of the invention

5 The present invention provides an adjustment device for adjusting the height of a washstand. The device utilizes a simple mechanism to allow a washstand, which fixed on a sliding beam, move up and down along a guiding track. The device also adjusts the height of the washstand by an actuating device.

### 2. Description of the prior art

10 A washstand in the prior arts is fixed on a wall with a given height. The height used is an approximate height derived from the average height of the population in certain area. However, more intimate interaction and communication between people has broken the solid boundary of an area, the design of the public facilities, such as a washstand, cannot be designed based only on the average height of the population in that local domain anymore. Therefore, the fixed washstand of the prior art can no  
15 more satisfy the most basic requirement for most users. Besides, when a person with injured spine faces the height of a fixed washstand, he/she cannot bend to fit the height and cannot do their daily routines. This makes the necessary cleaning a nightmare for this category of people.

20 A key design concept of the present invention is to improve drawbacks of the ergonomic approach of the bath facilities existing nowadays. The bath facilities on the market cannot take care of the varied demands by people with height variation and the injury in spine. Moreover, the prior arts have failed to take the cost-effectiveness and operation environment into consideration.

Therefore, a practical view is to include the following tips for the invention of a new generation washstand:

(1) The operation environment of the washstand is always wet and has limited space to install other devices. Therefore the design of washstands should be compact  
5 and avoid applying extra electrical components.

(2) Market research indicates that the cost of a washstand usually ranges from NTD 2,000 to 3,000 (on 2003 level). Therefore, the acceptable price to install a washstand with height adjustment should be controlled within NTD 5,000.

Reference is made to TWP NO. 366,788, "THE HEIGHT ADJUSTMENT  
10 WASHSTAND". The washstand in the prior art is comprised of a washstand, a washbasin, and two full-length fixed shafts. The washstand is fixed by screws. The two fixed shafts are set up beside and in the back of the washstand horizontally and vertically. Two sleeves of the washbasin put into the two fixed shafts respectively, so that the sleeves can move up and down along the fixed shafts to adjust and fix the  
15 height of the washstand. However, due to its specific mechanism, the height adjustment method of prior art requires to undo all the screws respectively. This makes the adjustment method awesome and unable to be performed by kids or handicapped people .

In reference to a pneumatic chair adjustment device, users are seen to freely  
20 adjust the height by gravity. Also in view of its structure, which is assessed the nature of easy to manufacture and install, the present invention includes the pneumatic stick component to the lifting mechanism as a unique design. The present invention further develops an innovative structure to achieve the objective for allowing all users adjust the height of the washstand freely.

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## **SUMMARY OF THE INVENTION**

An objective of the present invention is to provide an innovative mechanism for adjusting the height of a washstand. The device utilizes a simple mechanism to allow a washstand, which fixed on a sliding beam, to move up and down along a guiding  
5 track.

The main objective of the present invention is to include an adjustment device that can vary the height of the washstand as required by an actuating device.

The adjustment device of the present invention comprises a base, a sliding device, a sliding beam, and an actuating device. The sliding device is fixed on the  
10 base. The sliding beam connects to the sliding device in a way of moving up and down. The washstand is fixed on the sliding beam so that the washstand is able to move up and down. The actuating device provides necessary potential energy for lifting the washstand.

Thereby, the washstand fixed on the sliding beam can move up and down by the  
15 sliding device and the height to which the washstand moves is adjusted by the actuating device.

The advantage and spirit of the invention may be understood by the following recitations together with the appended drawings.

## **BRIEF DESCRIPTION OF THE APPENDED DRAWINGS**

20 FIG. 1 is a schematic diagram, which shows the system structure of the preferred embodiment for the present invention.

FIG. 2 is a blow-up diagram of the pneumatic stick for the preferred embodiment of the present invention.

FIG. 3 is an assembly view of the pneumatic stick.

### DETAILED DESCRIPTION OF THE INVENTION

An adjustment device 20 is used for adjusting the height of a washstand 10. Reference is made to FIG. 1, a schematic diagram, which shows the system structure of the preferred embodiment for the present invention. The adjustment device 20 comprises a base 30, a sliding device 40, a sliding beam 50, and an actuating device 60. The sliding device 40 is fixed on the base 30, wherein the sliding device 40 is consisted of a sliding cover 80 and a set of guiding tracks 90. The sliding beam connects to the sliding cover 80, and the washstand 10 is fixed on the sliding beam 50 so that the washstand 10 moves up and down via the sliding cover 80 and the guiding tracks 90. The actuating device 60 comprises a control switch 70 for switching on the actuating device 60, wherein the actuating device 60 is a pneumatic stick, a hydraulic device, or other height adjustment devices.

Reference is made to FIGs. 2 and 3 in which FIG. 2 is a blow-up diagram of the pneumatic stick 100 for the preferred embodiment of the present invention and FIG. 3 is an assembly view of the pneumatic stick 100. The pneumatic stick 100 comprises a piston 102, an inner shaft plug 104, an inner shaft 106, an inner shaft inside stick 108, an inner shaft outside stick 110, a C ring 112, and a support stick 114. The piston 102 and the inner shaft plug 104 are put on the inner shaft 106 and inserted in the inner shaft inside stick 108 respectively. The piston 102 is used for adjusting the inner space of the pneumatic stick 100, so as to adjust the inner air pressure of the pneumatic stick 100 to achieve the actuating function. The inner shaft plug 104 seals the opening of the inner shaft inside stick 108. Finally, the inner shaft inside stick 108 including the afore-mentioned components as a whole is put into the inner shaft outside stick 110 and the support stick 114 in turn, while allowing the inner shaft 106 and the inner shaft outside stick 110 to be fixed by the C ring 112. Therefore, when the user adds external forces to the inner stick 106 to compress the inner space of the

inner shaft inside stick 108, the air pressure will increase and the potential energy is stored in the pneumatic stick 100. The potential energy will be released to lift up the washstand 10 through the pneumatic stick 100.

The actuating mechanism of the present invention is described in the following.

5 The guiding tracks 90 of the sliding device 40 connect to the sliding beam 50 by the sliding cover 80. The sliding cover 80 limits the sliding beam 50 to move up and down only along the set of guiding tracks 90. The washstand 10 is fixed on the sliding beam 50. When a user presses the control switch 70, his/her body weight is added on the washstand 10, thus driving the washstand 10 down along the guiding

10 tracks 90. At the same time, the actuating device 60 stores the energy for lifting back the washstand 10 at later stage. When the washstand 10 achieves the proper height, release the control switch 70 can stop the washstand 10 and fix it at the desired position. If the user later intends to lift back the washstand 10, he/she then presses the control switch 70. The actuating device 60 drives the washstand 10 along the guiding

15 tracks 90. When the user releases the control switch 70, the washstand 10 will stop at the corresponding position. In this way, the objective of adjusting the height of the washstand is achieved. Considering the drainage, a flexible pipe is used to adapt the requirement of varying heights.

The present invention utilizes simple mechanical assembly to freely adjust the

20 washstand. Considering the safety and maintenance issues for bath facilities in wet environments, the present invention avoids adopting electric equipment and electric control loop. Meanwhile, the complexity and cost of the system are reduced. The pneumatic stick as used in the present invention is a complete pneumatic device itself. It is simple in structure and easy to install. For the pneumatic stick, no external power

25 is needed. Nor is the air inside needed to refill during its life cycle.

With the example and explanations given above, the features and spirits of the invention are hopefully well covered. Those skilled in the art will readily observe that numerous modifications and alterations of the device may be made while

retaining the teaching of the invention. Accordingly, the above disclosure should be construed as limited only by the metes and bounds of the appended claims.